

MEMORANDUM

DATE: July 8, 2015

TO: Nick Hetrick, Arcata FWO

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SUBJECT: 2015 Klamath River Juvenile Chinook Salmon Health Monitoring,
Ceratonova shasta and *Parvicapsula minibicornis* Prevalence Data

As a component of Klamath River fish health assessment, the California-Nevada Fish Health Center is examining juvenile Klamath River Chinook salmon to monitor the prevalence of *Ceratonova shasta* and *Parvicapsula minibicornis* infection. Fish are collected by biologists with the Karuk Tribe, Yurok Tribe, and US Fish and Wildlife Service. The CA-NV Fish Health Center is coordinating disease monitoring efforts and providing laboratory support for the project.

To date, QPCR testing has been performed for fish collected 29 March through 7 June for the Shasta to Scott (K4), and 12 April to 21 June for the Scott to Salmon (K3). Collection and testing of coded wire tagged juvenile Chinook commenced the week of 21 June for the Salmon to Trinity River (K2) reach and on 7 June for the Trinity to Estuary (K1) reach. Note that date ranges vary among the K4 and K3 reach graphs.

Ceratonova shasta has been detected in 81.0% (416/516) of fish tested to date. *Parvicapsula minibicornis* has been detected in 88.0% (418/476) of fish tested. Clinical disease due to *C. shasta* (enteronecrosis) was more pronounced in early to mid-June in the lower reaches (K3, K2 and K1). Tribal biologists reported an estimate of 5-15% mortality in approximately 200,000-300,000 juvenile Chinook salmon holding in the Blue Creek thermal refugium the weeks of 7 June and 14 June. All data are preliminary and may be subject to final revision prior to the annual report for this juvenile disease monitoring program.

Table 1. *Ceratonova shasta* prevalence of infection (POI) by Quantitative Polymerase Chain Reaction (QPCR) in select reaches.

Reach	Sample Week	Date	Total Number Samples	Number <i>C. shasta</i> Positive	<i>C. shasta</i> POI
Shasta to Scott (K4)	1	29-Mar	20	0	0%
	2	5-Apr	20	4	20%
	3	12-Apr	20	7	35%
	4	19-Apr	20	18	90%
	5	26-Apr	20	20	100%
	6	3-May	20	20	100%
	7	10-May	20	18	90%
	8	17-May	20	19	95%
	9	24-May	20	19	95%
	10	31-May	20	11	55%
	11	7-Jun	23	20	87%
Scott to Salmon (K3)	1	29-Mar	NS ¹	NS	NS
	2	5-Apr	NS	NS	NS
	3	12-Apr	20	5	25%
	4	19-Apr	20	20	100%
	5	26-Apr	21	20	95%
	6	3-May	21	21	100%
	7	10-May	22	21	95%
	8	17-May	20	16	80%
	9	24-May	23	20	87%
	10	31-May	20	19	95%
	11	7-Jun	20	20	100%
	12	14-Jun	22	19	86%
	13	21-Jun	23	19	83%
Salmon to Trinity (K2)	13	21-Jun	20	20	100%
Trinity to Estuary (K1)	11	7-Jun	20	20	100%
	12	14-Jun	21	20	95%

¹ NS – Not Sampled.

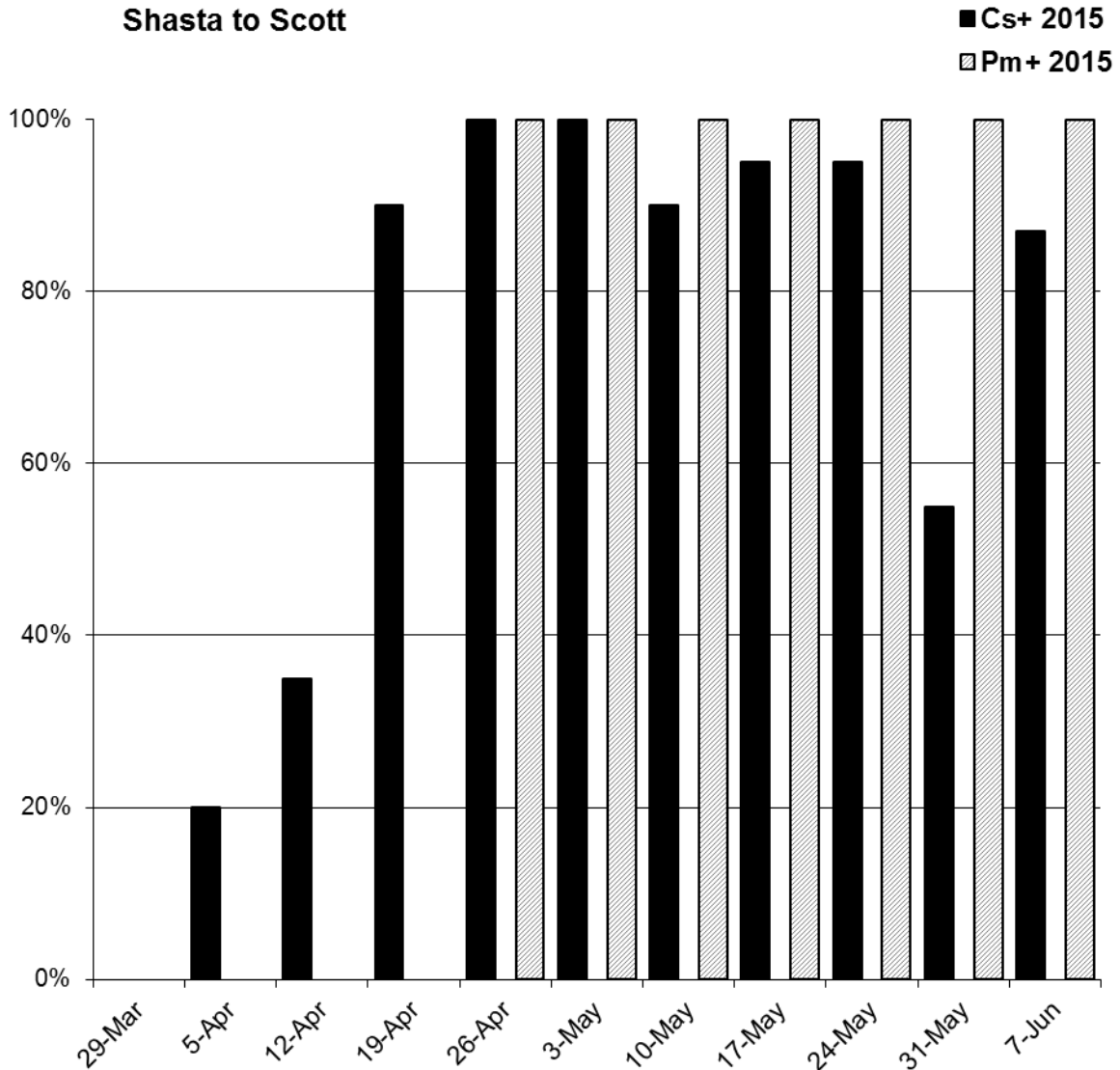


Figure 1. Weekly prevalence of *Ceratonova shasta* and *Parvicapsula minibicornis* infection in juvenile Chinook salmon captured in the Shasta to Scott (K4) reach on the Klamath River from 29 March to 7 June. Twenty fish were sampled on 29 March, but were negative for *C. shasta*. Testing for *P. minibicornis* was not done on 29 March through 12 April because kidney tissue volume was too small.

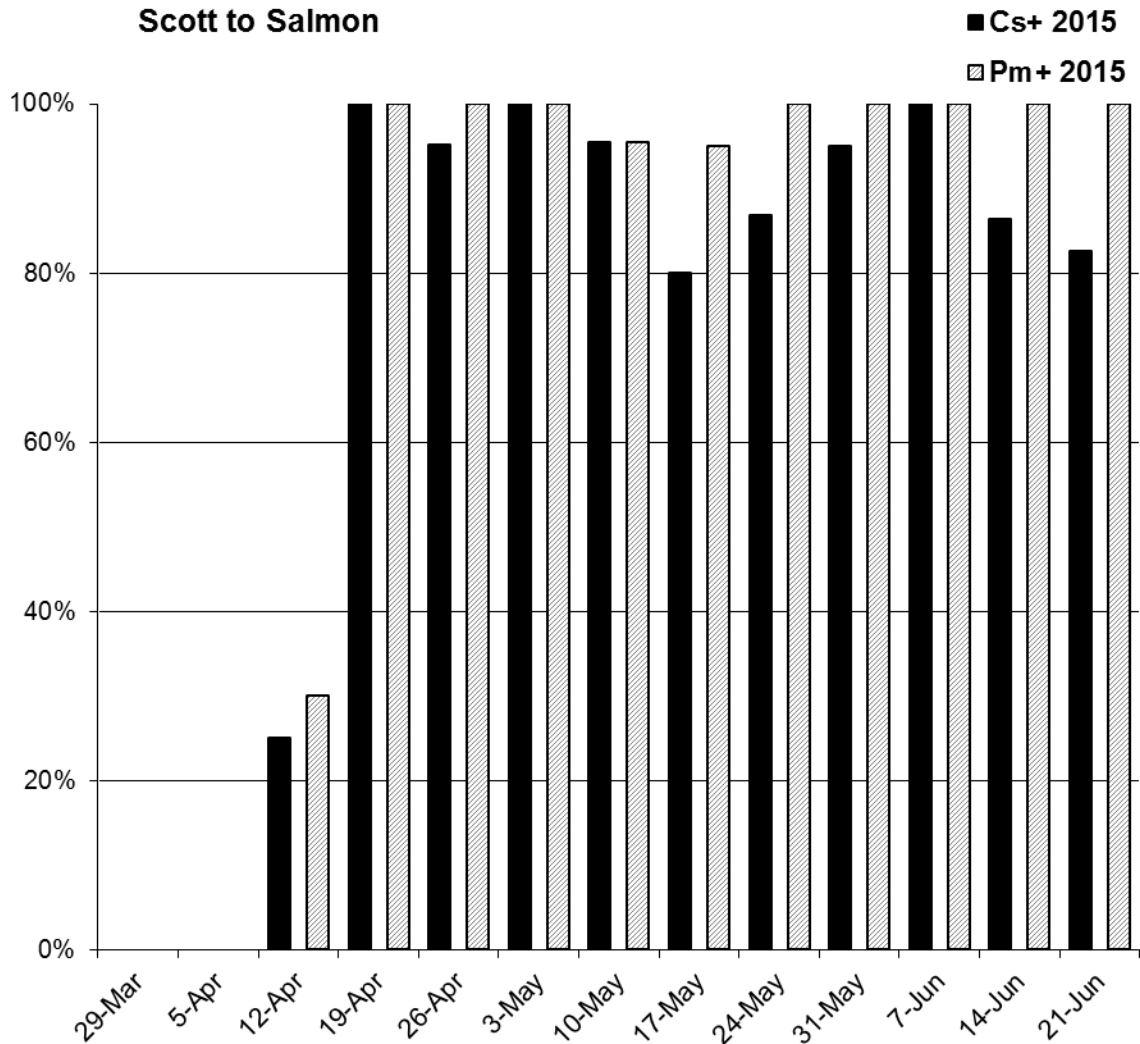


Figure 2. Weekly prevalence of *Ceratonova Shasta* and *Parvicapsula minibicornis* infection in juvenile Chinook salmon captured in the Scott to Salmon (K3) reach on the Klamath River from 12 Apr to 21 June. Sampling of this reach commenced the week of 12 April, and twenty to twenty-three fish were sampled for all following weeks shown on the graph.